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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,668	12/27/2005	Yoav Bar-Yaakov	0-05-109	4122

42009 7590 07/27/2010

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EXAMINER	
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ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
07/27/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/541,668	BAR-YAAKOV ET AL.	
	Examiner	Art Unit	
	Megan McCulley	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-10 and 20-22* is/are pending in the application.

4a) Of the above claim(s) *10,20 and 21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-10 and 20-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Newly amended submitted claims 10, 20 and 21 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the claims are now directed to a flame-retarded engineered thermoplastic instead of a polymeric composition. This is the final product of the intermediate flame retardant of claim 1 and the polymeric composition previously presented.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 10, 20 and 21 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-4, 6-10 and 20-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 22 is amended to contain the

new limitation "said method being characterized in that it does not include any step wherein residual organic solvents are removed". The originally filed specification does not disclose support for this limitation. According to the MPEP 2173.05 (i):

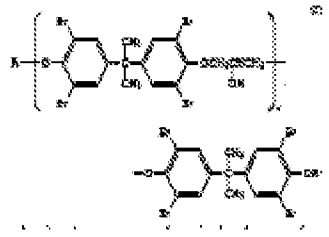
> Any negative limitation or exclusionary proviso must have basis in the original disclosure. If alternative elements are positively recited in the specification, they may be explicitly excluded in the claims. See In re Johnson, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977) ("[the] specification, having described the whole, necessarily described the part remaining."). See also Ex parte Grasselli, 231 USPQ 393 (Bd. App. 1983), aff 'd mem., 738 F.2d 453 (Fed. Cir. 1984). The mere absence of a positive recitation is not basis for an exclusion. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 22, 1-3 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai et al. (U.S. Pat. 5,250,590) in view of Nantaku et al. (JP 2001-310990). Citations to the Japanese document refer to the English translation of the document.

Regarding claim 22: Nakai et al. teaches a flame retardant polymeric composition (abstract) comprising compounds of the formula:



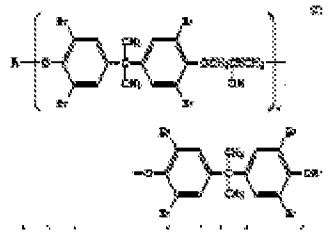
where R and R' can be a glycidyl group or  . It is made by bromobisphenol A epoxy/low molecular weight brominated epoxide and tribromophenol at a temperature of 200 ºC (col. 6 lines 25-30) which would make resins with the bromine in the positions claimed in the formulas of claim 1. While the specific type of bromobisphenol A epoxy is not disclosed, it is inherent that tetrabromobisphenol A is used since there are four bromines on the bisphenol moiety as shown in the picture of the abstract. No solvent is used in the production and no solvent is removed (col. 6 lines 25-32). A catalyst/lithium hydroxide is used (col. 6 lines 25-30). The degree of polymerization is n=30 and the epoxy equivalent is 90,000 (Table 1 example 3). From these numbers, the molecular weight and percentage of glycidyl end groups can be calculated. The molecular weight is in the range of 18672-19334: 526 (end group) + 600 (middle group) *30 =18526 + either 73*2 for 2 epoxy end groups or + 404*2 for 2 tribromophenyl groups. Therefore, the amount of epoxy end groups is in the range of 10.3-10.7%: 18672 g composition/mol composition * 1 epoxy equivalent/90000 g composition * 1 mol composition/2 mol end groups *100% =10.3% epoxy/mol end groups; 19334 g composition/mol composition * 1 epoxy equivalent/90000 g composition * 1 mol composition/2 mol end groups *100% =10.7% epoxy/mol end groups. The tribromophenyl ends group would then be 89.7-89.3%. The reduction in corrosion is a latent property of the composition. See MPEP 2145 II. The flame

retardant being used for engineered thermoplastics is the intended use and carries little patentable weight.

Not disclosed is the acid number or the amount of free tribromophenol content. However, Nantaku et al. teaches a similar composition with an acid number of 0.3 mgKOH/g (para. 31). This would correspond to an amount of free tribromophenol of 0.03% if this number is only reflective of the residual tribromophenol. Nantaku et al. and Nakai et al. are analogous art since they are both concerned with the same field of endeavor, namely compositions of brominated epoxy flame retardants. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the acid number of Nantaku et al. with the flame retardant of Nakai et al. and would have been motivated to do so for such desirable properties as less generation of corrosive gas, as evidenced by Nantaku et al. (para. 19).

The molecular weight of the low molecular weight brominated epoxide is not disclosed. However, Nantaku et al. teaches using a low molecular weight epoxy having a molecular weight of 790 g/mol (example 2 para. 31). At the time of the invention a person having ordinary skill in the art would have found it obvious to use the low molecular weight epoxy of Nantaku et al. in the process of Nakai et al. and would have been motivated to do so since viscosity is dependent on molecular weight and a low viscosity reactant is easier to mix in the reaction.

Regarding claims 1, 2, 3, 6, 7, 8, 9: Nakai et al. teaches a flame retardant polymeric composition (abstract) comprising compounds of the formula:



where R and R' can be a glycidyl group or  . It is made by bromobisphenol A epoxy and tribromophenol (col. 6 lines 25-30) which would make resins with the bromine in the positions claimed in the formulas of claim 1. While the specific type of bromobisphenol A epoxy is not disclosed, it is inherent that tetrabromobisphenol A is used since there are four bromines on the bisphenol moiety. No solvent is used in the production and no solvent is removed (col. 6 lines 25-32). The degree of polymerization is n=30 and the epoxy equivalent is 90,000 (Table 1 example 3). From these numbers, the molecular weight and percentage of glycidyl end groups can be calculated. The molecular weight is in the range of 18672-19334: 526 (end group) + 600 (middle group) *30 =18526 + either 73*2 for 2 epoxy end groups or + 404*2 for 2 tribromophenyl groups. Therefore, the amount of epoxy end groups is in the range of 10.3-10.7%: 18672 g composition/mol composition * 1 epoxy equivalent/90000 g composition * 1 mol composition/2 mol end groups *100% =10.3% epoxy/mol end groups; 19334 g composition/mol composition * 1 epoxy equivalent/90000 g composition * 1 mol composition/2 mol end groups *100% =10.7% epoxy/mol end groups. The tribromophenyl ends group would then be 89.7-89.3%. The reduction in corrosion is a latent property of the composition. See MPEP 2145 II. The flame retardant being used for engineered thermoplastics is the intended use and carries little patentable weight.

Not disclosed is the acid number or the amount of free tribromophenol content. However, Nantaku et al. teaches a similar composition with an acid number of 0.3 mgKOH/g (para. 31). This would correspond to an amount of free tribromophenol of 0.03% if this number is only reflective of the residual tribromophenol. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the acid number of Nantaku et al. with the flame retardant of Nakai et al. and would have been motivated to do so for such desirable properties as less generation of corrosive gas, as evidenced by Nantaku et al. (para. 19).

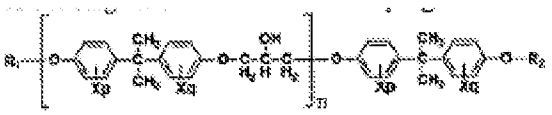
Claim Rejections - 35 USC § 102

Claim Rejections - 35 USC § 103

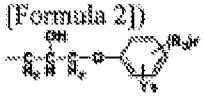
The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3, 4, 6-9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nantaku et al. (JP 2001-310990). Citations to the Japanese document refer to the English translation of the document.

Regarding claims 1, 3, 6, 7, 8, 9: Nantaku et al. teaches a flame retardant polymeric composition (abstract) comprising compounds of the formula:



where R1 and R2 can be a glycidyl group or

(Formula 2))  and X and Y can be a halogen (para. 7 page 3). It is made by brominated bisphenol A epoxy, tetrabromobisphenol A and tribromophenol (para. 31 page 7) which would make resins with the bromine in the positions claimed in the formulas of claim 1. Synthetic example 2 (page 7 para. 31) removes the solvent as in example 1 (para. 30). The acid number is 0.3 mgKOH/g (para. 31). If this is only reflective of the residual tribromophenol, the amount of free tribromophenol would be 0.03%. The degree of polymerization is n=22 and the epoxy equivalent is 40,300 (para. 31). From these numbers, the molecular weight and percentage of glycidyl end groups can be calculated. The molecular weight is in the range of 13872-14534: 526 (end group) + 600 (middle group) *22 =13726 + either 73*2 for 2 epoxy end groups or + 404*2 for 2 tribromophenyl groups. Therefore, the amount of epoxy end groups is in the range of 17.2%-18%: 13872 g composition/mol composition * 1 epoxy equivalent/40300 g composition * 1 mol composition/2 mol end groups *100% =17.2% epoxy/mol end groups; 14534 g composition/mol composition * 1 epoxy equivalent/40300 g composition * 1 mol composition/2 mol end groups *100% =18% epoxy/mol end groups. The tribromophenyl ends group would then be 82%-82.8%. The reduction in corrosion is a latent property of the composition. See MPEP 2145 II. The flame retardant being used for engineered thermoplastics is the intended use and carries little patentable weight.

While the method of making the flame retardant is not the method claimed in instant claim 22, this is a product by process claim. Product-by-process claims are not

limited to the manipulations of the recited steps, only the structure implied by the steps (see MPEP 2113). It is the position of the Office that the structure of the flame retardant made by the process of claim 22 is the flame retardant recited in Nantaku et al.

Alternatively, the flame retardant of Nantaku et al. is so close in structure and function to the flame retardant made by claim 22 that a person having ordinary skill in the art would expect them to have the same properties.

Regarding claim 4: Since the composition of flame retardant resins has 17-18% epoxy end groups (see rejection above) and if all of these end groups were found on a compound of formula (I), which has two epoxy groups, the amount of this compound in the composition would be 8.5-9%, which is within the claimed range of 0-10%. If all of these epoxy groups were found on a compound of formula (III), which has one epoxy group, the amount of this compound in the composition would be 17-18%, which is within the claimed range of 0-30%. Therefore, all the ranges are inherently met because if the epoxy groups were found on a mixture of these two compounds, the amounts of the compounds would only decrease and remain within the claimed range.

Response to Arguments

Applicant's arguments filed May 4, 2010 have been fully considered but they are not persuasive.

A) Applicant's argument that the applied prior art does not disclose low organic solvent content as claimed is not persuasive. Nakai et al. does not use organic solvent and therefore the low solvent content claimed is disclosed. Nantaku et al. teaches

removing the organic solvent. No evidence is supplied that Nantaku et al. does not remove the solvent. Comparison must be made with the closest prior art (MPEP 716.02 (e)). Examples 2 and 3 in the instant specification are not the same as the examples disclosed in Nantaku et al. and therefore do not show comparison with the closest prior art.

B) Applicant's argument that the instant invention shows unexpected results with respect to higher melt flow index and lower melt viscosity than the applied prior art is not persuasive. The claims are directed to a flame retardant. Examples in Tables II and III in the instant specification also include additional components such as polyesters and fillers, which could affect the melt flow index and viscosity. Unexpected results must be commensurate in scope with the claimed invention (MPEP 716.02 (d)). The claimed invention does not require fillers and polyesters. Also comparison must be with the closest prior art (MPEP 716.02 (e)).

C) Applicant's argument that Nantaku et al. contains too much residual solvent compared to the instant invention is not persuasive. No evidence is supplied that the solvent is not removed to the claimed level or that the properties are changed. Example 3 in the specification is not the composition of Nantaku et al. and comparison must be with the closest prior art (MPEP 716.02 (e)).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan McCulley whose telephone number is (571)270-3292. The examiner can normally be reached on Monday - Thursday 7:30-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harold Y Pyon/
Supervisory Patent Examiner, Art Unit 1796

/M. M./
Examiner, Art Unit 1796